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EXAMINER

DAO, THUY CHAN

ART UNIT

PAPER NUMBER

2192

DATE MAILED: 12/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/039,035

Applicant(s)

WILT ET AL.

Examiner

Thuy Dao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. This action is responsive to the amendment filed on September 18, 2006.
2. Claims 1-26 have been examined.

### Response to Amendments

3. Per Applicants' request, claims 1, 8, 17-18, and 26 have been amended.
4. The objection to drawings is withdrawn in view of Applicants' amendments. The Examiner acknowledges receipt of replacement drawings Figs. 3A-B and 5.
5. The objection to the specification is withdrawn in view of Applicants' amendments.
6. The 35 USC §112, second paragraph rejection over claims 8, 17, and 26 is withdrawn in view of Applicants' amendments.
7. The 35 USC §101 rejection over claims 18-26 is withdrawn in view of Applicants' amendments.

### Drawings

8. The drawings are objected to because of minor informalities:

The replacement sheets are currently marked "*Sheet 1 of 2*" and "*Sheet 2 of 2*". For consistency with the originally filed drawings, these replacement drawings should be labeled: - -Page 3 of 7 - Replacement Sheet- - (for Figs. 3A and 3B) and - -Page 5 of 7 - Replacement Sheet- - (for Fig. 5); and

In Fig. 5, arrows should be added and dashed lines should be made continuous.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

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changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### **Response to Arguments**

9. The Applicants are thanked for a thorough reply. Applicants stated,

*"Oldman does not teach an intermediate language compiler as claimed by the applicants"* (e.g., page 13, lines 23-29); and

*"Applicants note that claim 1, as amended, recites "an intermediate language compiler capable of compiling the application instructions and the runtime instructions into a combined set of instructions executable by the processor for interacting with the selected driver". Applicants submit that the object code system taught by Oldman does not teach compiling into a combined set of instructions"* (e.g., page 13, lines 30 – page 14, line 2).

After further consideration, an Information Disclosure Statement IDS document, "Fast Compiler Re-Targeting to Different Platforms by Translating at Intermediate Code Level", has been used to form new ground of rejection as set forth in details below.

### **Claim Rejections – 35 USC § 103**

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-2, 6-10, 15-19, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA (art of record, Background of the Invention, pages 1-2) in view of Oldman (art of record, US Patent No. 6,769,115) and further in view of "Fast Compiler Re-Targeting to Different Platforms by Translating at Intermediate Code Level" to Sato, IDS document filed January 4, 2002 (art of record, hereinafter "Sato").

**Claim 1:**

APA discloses *a computer system, comprising:*

*a processor (e.g., page 2: 2-10);*

*an operating system having a selected driver that interacts with a computing component (e.g., page 1: 7-13);*

*a plurality of application instructions (e.g., page 1: 27-28), said instructions being in an intermediate language readable by an intermediate language compiler (e.g., page 2: 11-16);*

*a plurality of runtime instructions, said instructions being in an intermediate language readable by an intermediate language compiler (e.g., page 1: 21-26); and*

*an intermediate language compiler (e.g., page 2: 11-17).*

APA does not explicitly disclose *compiling the application instructions and the runtime instructions into a combined set of instructions executable by the processor for interacting with the selected driver.*

However, in an analogous art, Oldman discloses *compiling a set of application instructions and a set of runtime instructions into instructions executable by the processor for interacting with the selected driver (e.g., FIG. 3, compiling Application Source 103 and Adl Headers 105 and Libraries 106 into Application Binary 107(a-c), and related text in col.6: 50 – col.7: 9; and*

*FIG. 8, compiling Application Source 103, OS Headers and Libraries 303(a-c), Adl Headers and Libraries 105-106 to Application Binary 113(a-c), col. 7: 19-45).*

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Oldman into that of APA. One would have been motivated to do so to improve the program development environment in which a program which is to execute on a plurality of platforms can be developed as suggested by Oldman (e.g., col.3: 1-41).

As set forth above, Oldman explicitly discloses Application Binary 113(a-c) (FIGs. 3 and 8) as a combined set of instructions (recited in claim 1) and as a single executable program (recited in claims 9 and 18). Neither APA nor Oldman explicitly discloses the set of application instructions and the set of runtime instructions being in an intermediate language.

However, in an analogous art, Sato discloses using Common front-end to compile source code (i.e., Oldman, FIGs. 3 and 8, Application Source 103) to a common Intermediate Language IL (i.e., Sato, Fig. 1, Abstract Syntax Tree AST), and then to either OIL (the IL of PROTEL compiler), UCODE (the IL of MIPS C compiler), or MIIL (the IL of CHILL compiler), and finally to an executable program (e.g., Sato, Fig. 1 and related text, pp. 924-925, section 3, Solution Overview).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Sato into that of APA and Oldman. One would have been motivated to do so to provide an efficient solution of multiple targeting by translating at intermediate language (IL) level as suggested by Sato (e.g., page 923, col.1: 1-24, col.2: 24-32).

**Claim 2:**

The rejection of claim 1 is incorporated. APA also discloses *the selected driver comprises a plurality of intermediate language instructions* (e.g., page 2: 24-26).

**Claim 6:**

The rejection of claim 1 is incorporated. Oldman further discloses *the plurality of application instructions and the plurality of runtime instructions are delivered to the computer system over a network* (e.g., FIG. 3, Application Source 103, Adl Headers 105, and Libraries 106 are sent to different computer systems 319(a-c) ).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Oldman into that of APA and Sato. One would have been motivated to do so as set forth in claim 1 above.

**Claim 7:**

The rejection of claim 2 is incorporated. Oldman further discloses *the selected driver is delivered over a network* (e.g., FIG. 8, OS Headers and Libraries 303(a-c) are sent to different computer system 319(a-c) ).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Oldman into that of APA and Sato. One would have been motivated to do so as set forth above.

**Claim 8:**

The rejection of claim 1 is incorporated. APA also discloses *the intermediate language compiler comprises a Just-In-Time compiler* (e.g., page 2: 11-17).

**Claim 9:**

Claim 9 is a method version, which recites the same limitations as those of the computer system claim 1, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the references teach all of the limitations of the above claim, they also teach all of the limitations of claim 9.

**Claim 10:**

The rejection of claim 9 is incorporated. APA discloses *providing a driver program in an intermediate programming language* as set forth in claim 2 (e.g., page 2:

24-26) but does not explicitly disclose *the driver program is compiled with the application program and the runtime program into the single executable program.*

However, Oldman discloses *the driver program is compiled with the application program and the runtime program into the single executable program* (e.g., FIG. 8, blocks 103, 105, 106, and 303(a-c) are compiled into Application Binary 113(a-c), respectively).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Oldman into that of APA and Sato. One would have been motivated to do so as set forth above.

**Claims 15-17:**

Claims 15-17 are method versions, which recite the same limitations as those of the claims 6-8, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the references teach all of the limitations of the above claim, they also teach all of the limitations of claims 15-17.

**Claims 18-19 and 24-26:**

Claims 18-19 and 24-26 are computer-readable medium versions, which recite the same limitations as those of the method claims 9-10 and 15-17, respectively, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the references teach all of the limitations of the above claim, they also teach all of the limitations of claims 18-19 and 24-26, respectively.

12. Claims 3-5, 11-14, and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Oldman and Sato and further in view of Schmit (art of record, US Patent No. 6,148,438).

**Claim 3:**

The rejection of claim 2 is incorporated. Neither APA, Oldman, nor Sato explicitly discloses *the selected driver is split into user mode and kernel mode instructions.*



However, in an analogous art, Schmit discloses *the selected driver is split into user mode and kernel mode instructions* (e.g., col.4: 14-28).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Schmit into that of APA, Oldman, and Sato. One would have been motivated to do so to enable use of objects which comprise virtual function sin both user and kernel modes and reduce number of user mode/kernel mode transitions as suggested by Schmit (e.g., col.2: 19-36).

**Claim 4:**

The rejection of claim 3 is incorporated. Schmit further discloses *the user mode instructions of the selected driver translates from device driver interface instructions to hardware-specific commands* (e.g., col.5: 56-67; col.7: 56-62).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Schmit into that of APA, Oldman, and Sato. One would have been motivated to do so to as set forth in claim 3 above.

**Claim 5:**

The rejection of claim 4 is incorporated. APA also discloses *the selected driver writes hardware-specific commands into an operating system-allocated buffer for submission to a scheduler of the hardware's time* (e.g., page 1: 7-13).

**Claim 11:**

The rejection of claim 10 is incorporated. Schmit further discloses *the driver program comprises a kernel mode portion provided in an executable form* (e.g., col.4: 29-36).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Schmit into that of APA, Oldman, and Sato. One would have been motivated to do so to as set forth above.

**Claim 12:**

The rejection of claim 11 is incorporated. As set forth in claim 2, APA also discloses *the driver program provided in the intermediate language form* (page 2: 24-26). Schmit further discloses *the driver program comprises a user mode portion* as set forth in claim 3 (e.g., col.4: 14-28).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Schmit into that of APA, Oldman, and Sato. One would have been motivated to do so to enable use of objects which comprise virtual function sin both user and kernel modes and reduce number of user mode/kernel mode transitions as suggested by Schmit (e.g., col.2: 19-36).

**Claims 13-14:**

Claims 13-14 are method versions, which recite the same limitations as those of the claims 4-5, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the references teach all of the limitations of the above claim, they also teach all of the limitations of claims 13-14.

**Claims 20-23:**

Claims 20-23 are computer-readable medium versions, which recite the same limitations as those of the claims 11-14, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the references teach all of the limitations of the above claim, they also teach all of the limitations of claims 20-23.

**Conclusion**

13. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication should be directed to examiner Thuy Dao (Twee), whose telephone is (571) 272 8570. The examiner can normally be reached on Monday – Friday from 6:30AM to 3:00PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam, can be reached at (571) 272 3695.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is (571) 272 2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

T. Dao



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SUPERVISORY PATENT EXAMINER